

Claim 1

Rejected claim 1 is generally drawn to a method to determine a cellular communication base station (BS) antennae array weight set corresponding to a subscriber unit (SU) including the feature(s) of:

transmitting a plurality of *pilot downlink signals* from the BS to the SU, each pilot downlink signal being processed with a different weight set than the other pilot downlink signals;
receiving a report signal for at least one of the pilot downlink signals; and
selecting a weight set from the plurality of weight sets based, at least in part, on the received report signal.

Thus, Applicants claim a method to determine a cellular communication base station antennae array weight set, wherein the report signal is for at least one of the **pilot** downlink signals.

In rejecting claim 1, the Action provides that a “**probing** signal is a type of ‘downlink pilot signal’.” This distinction is key. In the Response to Arguments section, the Action references Brennan, et al., ‘889 patent (hereinafter *Brennan*), to show the similarity between probe and pilot signals. *Brennan* does not teach that probe and pilot signals are one in the same, it states that an auxiliary signal can be transmitted to form either “a probe or pilot beam.” Furthermore, *Brennan*, is in the different art of Radar sidelobe reduction where pilot and probe signals do not have similar definitions as in the cellular art. The specification, in the second through last paragraphs of page 8, among other places, discloses that a pilot signal is different than a probing signal and that this is an entirely new use for a pilot signal.

In short, **probing** signals were used in the prior art to generate a signal feedback from the subscriber unit for precision beamforming. **Pilot** signals are used in

conventional wireless communication systems for limited functions, such as handoff control (i.e., between base stations) and power control.

In performing such limited functions, the mobile unit measures certain attributes of the pilot signal and reports back to at least the base station issuing the pilot signal, for example, to effect the base station's handoff control and power control features. In this regard, claim 1 discloses a method for establishing beamforming weights for an antenna array by leveraging a pre-existing system signal, i.e., the **pilot** signal, not necessarily requiring introduction of an additional control signal, the **probing** signal, into the RF environment for the purpose of determining beamforming weights.

In contradistinction to the claimed invention of, for example, rejected claim 1, the *Gerlach* reference teaches the use of an **additional "probing"** signal to be utilized with a feedback mechanism in order to estimate a mobile's received signal strength, from which weighting values are generated. The claimed invention, on the other hand, determines weights by exploiting, at least in part, a signal already present, namely, the pilot signal.

Well settled patent law requires that in order to anticipate a claim, a single reference must teach each and every element of the claim as presented in the claim. Applicants respectfully submit that insofar as the *Gerlach* reference does not teach or suggest the use of a pilot signal for determining weights, it fails to anticipate that which is claimed in rejected claim 1.

In light of at least the foregoing, Applicants respectfully request that the §102(b) rejection of claim 1 should be withdrawn.

Claims 2 and 3 are dependent upon claim 1. Since dependent claims necessarily include the limitations of the claims from which they depend, Applicants submit that

claims 2 and 3 are not anticipated by *Gerlach* for at least the reasons set forth above with respect to claim 1. Claims 10 and 12 contain similar limitations but are in Beauregard format. Accordingly, Applicants respectfully request that the §102(b) rejection of claims 2 and 3, and 10 and 12 be withdrawn.

Claim Rejections – 35 U.S.C. § 103(a)

In paragraphs 4 and 5, claims 4 and 5, and 13 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Gerlach*. In response, Applicants respectfully traverse the rejection of such claims.

In accordance with MPEP §706.02(j), one of the requirements to establish a prima facie case of obviousness is that “the prior art reference (or references when combined) must teach or suggest all the claim limitations” (emphasis added) (see also MPEP §2143.03 et seq.). In this instance, as discussed above, none of the cited references suggests or even mention determining weights based at least in part on a **pilot** signal as required in claims 1 and 10 from which claims 4-5 and 13-14 depend respectively. Thus, the references fail, even in combination, to teach or suggest at least one claim limitation, and therefore fail to make obvious the claimed invention.

Moreover, *Gerlach* actually teaches away from that which is claimed in rejected claim 1. In particular, because *Gerlach* teaches the use of a **probe** signal, *Gerlach* teaches away from exploiting, at least in part, an existing signal—namely, a **pilot** signal—to determine weights. The claimed invention, in contrast, does not necessarily require the use of an additional probe signal, which may cause undesirable effects (e.g., additional system RF noise, additional complexity in a base station or terminal, etc.) Thus, one

skilled in the art would not be motivated by the *Gerlach* reference to create that which is claimed in rejected claim 1. Accordingly, the *Gerlach* reference fails to render obvious at least this feature of the invention, as recited, for example, in claim 1. Claim 10 is a Beauregard claim with the same limitations as claim 1, and as such qualify successfully under the same patentability requirements as shown in this response.

Applicants note that the cited references fail to teach or suggest at least one limitation in claims 4 and 5, and 13 and 14. Accordingly, Applicants respectfully request that the §103(a) rejection of claims 4 and 5, and 14 and 15 be withdrawn.

In **paragraph 6** of the Action, claims 6 –9 and 15-18 are rejected as being unpatentable over *Gerlach* in view of the Admitted Prior Art, pursuant to 35 USC §103(a). In response, Applicants respectfully traverse the rejection of such claims.

Applicants respectfully submit that, at least for the reasons discussed above, no suggestion or motivation exists in the *Gerlach* reference or the Admitted Prior Art to use **pilot** signal(s), at least in part, to establish weight sets for beamforming. Moreover, the citation in the Action to the Admitted Prior Art fails to cure the deficiencies in the *Gerlach* reference identified above, especially since *Gerlach*'s introduction of **probe** signals that teach away from exploiting an existing **pilot** signal for weight determination. Accordingly, Applicants respectfully submit the *Gerlach* reference in view of Admitted Prior Art fails to make obvious the claimed invention as embodied in claim 1 and claim 10.

Applicants note that claims 6-9 depend from claim 1 and claims 15-18 ultimately depend from claim 10. Accordingly, in addition to any independent basis for patentability, Applicants respectfully submit that claims 6-9 and 15-18 are patentable

over the cited references by virtue of at least their dependence on patentable base claims 1 and 10. Thus, Applicants respectfully request that the §103(a) rejection of claims 6-9 and 15-18 be withdrawn.

In **paragraph 7** of the Action, claims 19-23 are rejected as being unpatentable over *Dybdal*, et al., pursuant to 35 USC §103(a). In response, Applicants respectfully traverse the rejection of such claims.

Applicants respectfully submit that, at least for the reasons discussed above, no suggestion or motivation exists in the *Dybdal* reference to use report signals based, at least in part, on **pilot** signal(s), to establish weight sets for beamforming. Accordingly, Applicants respectfully submit the *Dybdal* reference fails to teach at least one limitation, and therefore fails to make obvious the claimed invention as embodied in claim 19. Claims 20-23 depend from claim 19. Since independent claims necessarily include the limitations of claims from which they depend, Applicants submit that claims 20-23 are not anticipated by *Dybdal* for at least the reasons set forth above with respect to claim 19.

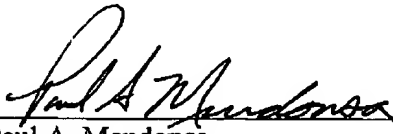
CONCLUSION

For at least the foregoing reasons, Applicants submit that claims 1-23, as filed, are in condition for allowance and such action is earnestly solicited. The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Please charge any shortages and credit any overcharges to our Deposit Account number 02-2666.

Respectfully submitted,
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